

AN ORIENTATION TO THE 3RD EDITION GERI-RXFILES: ASSESSING MEDICATIONS IN OLDER ADULTS

Purpose

The Geri-RxFiles was created to assist health care providers in assessing medication use in older adults. It is also intended to highlight potentially problematic medications in older adults based primarily on the Beers Criteria ²⁰¹⁹ and the STOPP ²⁰¹⁴ Criteria.

The Beers Criteria & STOPP Criteria

The Beers Criteria is a list of potentially inappropriate medications (PIMs) in older adults; these criteria have evolved to include discussion of various clinical factors that need to be included in the equation. A similar list is **The STOPP Criteria** (STOPP = Screening Tool of Older Persons' potentially inappropriate Prescriptions). Medications from these two lists are highlighted throughout the Geri-RxFiles to allow for easy identification using **S** and **B** to denote the medications found on the two lists. Additional medications not identified within these two lists, but potentially problematic are indicated by **RxFiles**.

Familiarizing Yourself with the Geri-RxFiles

Table of Contents

The table of contents lists all the topics & their corresponding page #s.

Introduction (page 1)

The *Introduction* discusses medication therapy & frailty in older adults, highlighting various considerations for optimal prescribing & deprescribing. Practical ideas are provided to help health care providers optimize medication therapy in the older adult population including how to avoid common pitfalls such as prescribing cascades.

Therapeutic Topics

Seven systems are covered in the Geri-RxFiles including: cardiology; endocrine & metabolic; gastrointestinal; genitourinary; musculoskeletal & connective tissue; neurology & psychiatry; & finally respiratory. A variety of miscellaneous topics are also covered. The therapeutic topics cover both an approach to assessing & optimizing the disease or condition, as well as highlights medications that may be potentially problematic in older adults. A more detailed description is contained in the section entitled "*The Anatomy of a Geri-RxFiles Therapeutic Topic*" (located in the column to the right).

Geri-RxFiles Features & Tools include:

- Clinical Frailty Score on page 5
- Deprescribing algorithms ([from **deprescribing.org**](http://fromdeprescribing.org)) on pages: 65, 74, 134, & 146
- Table of medications associated with QT prolongation on page 46
- Outcomes comparison table for diabetes agents on page 64
- Reference list of medications associated with falls & fracture risk on page 100
- Reference list of medications with anticholinergic effects on page 116
- Inhaler tips (choosing the right device & inhaler technique) starting on page 159
- Approaching drug interactions in older adults on page 166
- Medication administration challenges – *can this be crushed?* – on page 181

Tapering Information (page 208)

 This symbol indicates that a medication should be tapered upon discontinuation. Within the tapering section you will find the rationale for tapering a medication, common withdrawal symptoms, & a suggested tapering approach. This section is divided by medication classes, except for clonidine.

The Anatomy of a Geri-RxFiles Therapeutic Topic

Chronic Heart Failure with Reduced Ejection Fraction (≤40%) in Older Adults www.RxFiles.ca

Medications That May Worsen or Exacerbate HF

- Attempt to discontinue any medications that may worsen or exacerbate HF.
- If a medication is unable to be discontinued or switched to an alternative, a ↓ in dose may limit the risk of exacerbation or worsening of HF.

Conditions/Issues Potentially Exacerbating Medication: **Diabetes**, **Pain**, **Cardiovascular**

Medication Tapering Information:

Drug Class	All-Cause Mortality	HF Hospital Admissions
ACEI/ARB	✓	✓
Direct Renin Inhibitor	✓	✓
Diuretic	✓	✓
Hydralazine + Isosorbide Dinitrate	✓	✓
Statins (e.g. atorvastatin)	✓	✓
β-blocker	✓	✓

For individuals with HF-EF, determine if he/she is on HF triple therapy to reduce the risk of morbidity & mortality, unless contraindicated:

- ACEI (or ARB if an ACEI is not tolerated) + 2 HF β-blocker + 3 mineralocorticoid receptor antagonist (MRA) (e.g. spironolactone, eplerenone, finerenone)
- Review the need & dose of diuretics, other antihypertensives, etc. (see 2019 HF guideline following page for details)
- Agents have not been proven to reduce the risk of mortality and morbidity in HF and can limit duration of HF triple therapy.

Monitor for orthostatic hypotension when initiating & titrating HF triple therapy, as it can increase the risk of falls. These medications should be initiated with orthostatic hypotension. Consider separating the medication administration times of agents that lower BP, and/or dose at bedtime.

The **first section** of most therapeutic topics provides a stepwise approach to assessing a disease/condition including exploring potential contributors such as other medical conditions or medications. This section also discusses the non-pharmacological & medications treatments options.

Heart Failure in Older Adults: STOPP & Beers Criteria www.RxFiles.ca

Drug or Drug Class	STOPP	Beers	When a Medication Could Be Problematic for Older Adults	Clinical Concern
Angiotensin Converting Enzyme Inhibitors (ACEI)				
Benazepril ^{STOPP}			WITH HYPERKALEMIA	• Worsened hyperkalemia
Captopril ^{STOPP}			COMBINED RAAS INHIBITOR (ACEI, ARB, MINERALOCORTICOID RECEPTOR ANTAGONIST)	• Avoid routine use in those with chronic kidney disease Stage 3 or higher
Enalapril ^{STOPP}			SHARPLY INCREASED CREATININE	• Increased risk of hyperkalemia
Fosinopril ^{STOPP}			THROMBOCYTOPENIA WITH ANGIOGENIC RAAS INHIBITORS	
Lisinopril ^{STOPP}			WITH TRIMETHOPRIM-SULFAMETHOXAZOLE & DECREASED CREATININE CLEARANCE	• Increased risk of hyperkalemia when an ACEI or ARB is used with the antibiotic in presence of decreased creatinine clearance
Perindopril ^{STOPP}			AVOID ACEI WITH LITHIUM	• May increase lithium concentrations & toxicity
Quinapril ^{STOPP}			WITH CONCOMITANT USE OF ALDOSTERONE ANTAGONISTS (E.g. spironolactone, eplerenone, finerenone) WITHOUT MONITORING OF SERUM K ⁺	• Avoid, or monitor lithium levels
Ramipril ^{STOPP}			WITH PERSISTENT POSTURAL TERTROTICEMIA (e.g. recurrent drop in systolic blood pressure >20mmHg)	• Risk of syncope, falls
Trandolapril ^{STOPP}			NON-SELECTIVE BETA-BLOCKERS WITH A HISTORY OF ASTHMA REQUIRING TREATMENT	• ↑ Risk of bronchospasm, especially in severe asthma
Carvedilol ^{STOPP}			IN COMBINATION WITH VERAPAMIL OR DILTIAZEM	• Risk of complete heart block, avastole
Non-Selective: Acebutolol ^{STOPP}			WITH BACLOFEN (≤50 mg/d, Type II heart block, OR COMBINED HEART BLOCK	
Cardio-Selective: Atenolol ^{STOPP}				
Bisoprolol ^{STOPP}				
Metoprolol ^{STOPP}				
Non-Selective: Nadolol ^{STOPP}				
Pindolol ^{STOPP}				

The **second section** of most therapeutic topics is a table of the potentially problematic medications used in the treatment of the disease/condition. This section indicates if the medication appears on either the **Beers** or **STOPP** Criteria, in whom the medications are problematic, & other clinical concerns.

Renal & Hepatic Dose Adjustment

 Medications with the kidney or liver image next to them are eliminated by these organs & may require a dose adjustment in renal/hepatic impairment.

Indices & abbreviations (starting on page 226)

In these sections you will find what all the acronyms stand for, as well as key terms related to medications including **BRAND** (trade name) or **BRAND** (discontinued trade name), **chemical name**, **TRIALS**, & other key words.

The Colours of the Geri-RxFiles

Various colours of highlighting & text are used throughout the Geri-RxFiles to denote various things:

- **Important facts to draw your attention to will be highlighted in yellow**
- **AVOID** denotes doses/medications very likely to cause patient harm are bolded & red or **CAUTION** may be warranted for key points when highlighted in orange
- **Lifestyle, non-pharmacological, herbal or natural products are highlighted in green**
- Other **RxFiles Documents** that may be of interest are highlighted in teal with yellow text
- **Facts specific to older adults** are highlighted in tan in RxFiles charts & other resources

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ACKNOWLEDGEMENTS

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